Romania: RPKI status

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RPKI theory

What is RPKI anyway?

- RPKI is…

  - A resource certification (well familiar X.509 PKI certificates)

  - A security framework (extendable and flexible)Framework

- The currently implemented part of the RPKI is ROA

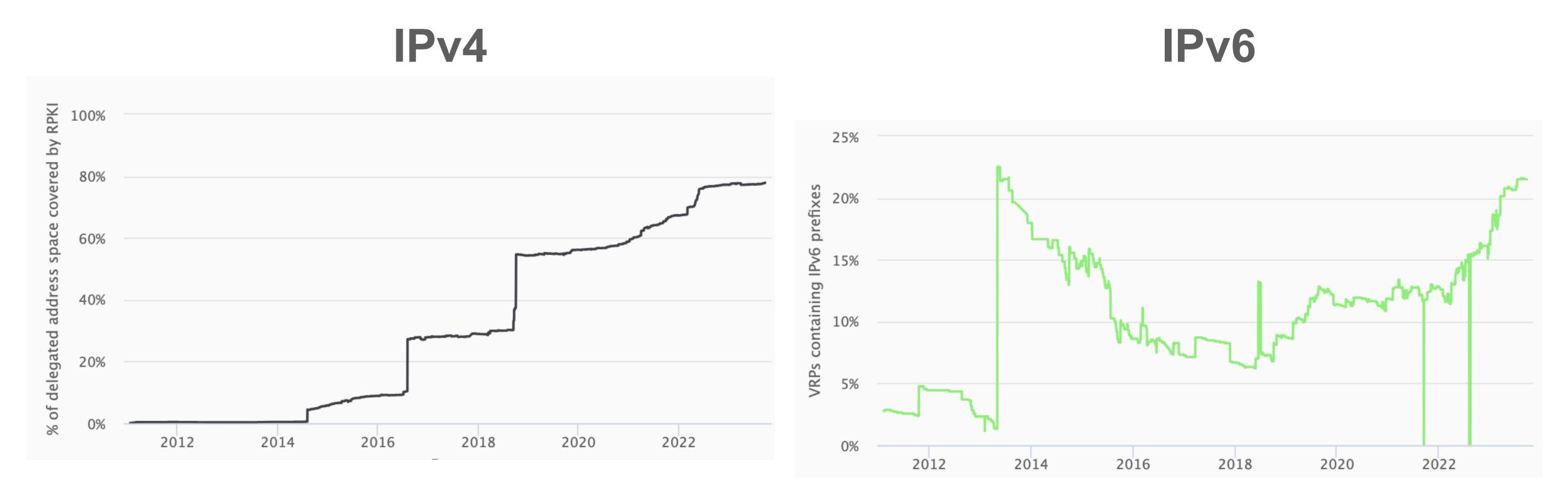 - ROA = Route Origin Authorisation

Two parts of RoA

- Signing your own resources

  - Databases are directly available

  - Therefore, the status is easy to check

- Validating and filtering the announcements you receive from other networks

  - No sources of direct information

  - Indirect detection methods

  - If the upstream discards invalid announcements, it isn't easy to reveal filtering on downstreams

  - Thus, it is quite difficult to accumulate statistical data

Practice
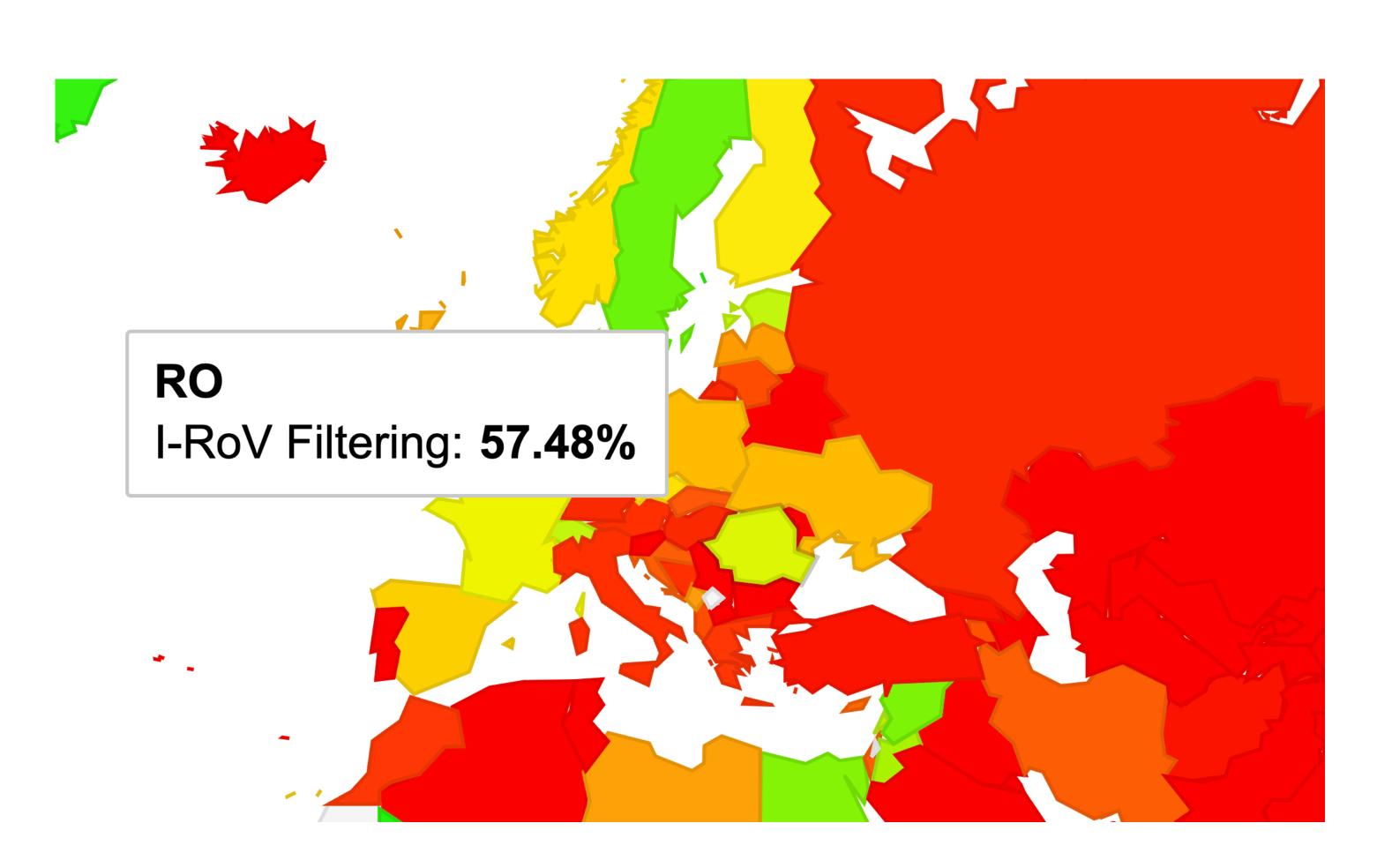
Signed address space in Romania

IPv4

IPv6

- The IPv4 part is really not bad!
- According to ISOC data, average worldwide is only 45%

Filtering on the country level

- APNIC has long used its tools to estimate RoV filtering at the country level

- Romania looks good!

- But what if we look deeper?

RO
I-RoV Filtering: **57.48%**

Deeper look

- A new tool, RoVista, provides information regarding ROV-based filtering per ASN

- Uses the unique technique IP-ID side-channel to reveal the facts of filtering

  - https://blog.apnic.net/2023/02/15/rovista-measuring-the-current-deployment-rate-status-of-rov/

  - https://perso.telecom-paristech.fr/drossi/paper/rossi18pam-a.pdf

- Provides API

  - Easy to integrate into existing tools

Romanian ASNs

- APNIC also provides information regarding the client cone size for all ASNs. Here is the data for Romania:

ASN	AS Name	IPv6 Capable	IPv6 Preferred	Samples
AS8708	RCS-RDS 73-75 Dr. Staicovici	45.63%	45.53%	1,083,813
AS12302	VODAFONE_RO Charles de Gaulle nr.15	10.58%	10.55%	272,684
AS8953	ASN-ORANGE-ROMANIA	15.98%	15.94%	259,968
AS35725	COSMOROM	0.06%	0.05%	74,946
AS9050	RTD Bucharest, Romania	0.05%	0.04%	65,565
AS48161	NG-AS Sos. Bucuresti - Ploiesti nr. 42-44	0.02%	0.02%	22,193
AS3223	VOXILITY	0.00%	0.00%	5,542
AS41496	RO-TVSAT-AS	0.55%	0.52%	3,255
AS212238	CDNEXT	14.89%	14.75%	2,800
AS9009	M247	46.11%	43.99%	2,123
AS31313	STS Bucharest, 323A Splaiul Independentei,Sector 6,060044,Romania	2.35%	2.35%	1,748
AS39737	PRIME-TELECOM-AS Prime Telecom	0.00%	0.00%	1,530
AS58065	PACKETEXCHANGE	0.00%	0.00%	1,294
AS50604	MEDIASUD-AS	0.08%	0.08%	1,186
AS31362	NETPROTECT	0.00%	0.00%	915

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APNIC and RoVista data combined

Romania top-15

Status of ROV-based filtering

GREEN — Detected (at least partial)

BLUE — Unknown

RED — No filtering

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Is it important?

Conclusions

- The main Romanian operator does validate routing origins

    - That's why the situation at the country level looks pretty good

- Medium-size Romanian operators still do not use routing origin validation

    - Local hijacks have high chances of being successful

        - Think local peering

    - Local hijacks are the most dangerous due to the low visibility from outside

- **Please, consider starting ROV-based filtering in your network**

- **There are easy, cheap and lightweight mature solutions available**

- **RIPE NCC has a special training courses to help**

  - **https://www.ripe.net/support/training/material#BGP**

  - **https://academy.ripe.net/enrol/index.php?id=15**

  - **Contact us to have a face-to-face training course**

Questions ?

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